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Argentina's Financial Crisis: Floating Money, Sinking Banking [⊗]

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Abstract

This paper argues that the relation between the currency board and the financial system—i.e., the link between money and banking—is essential to understand the 2001-02 Argentine crisis. The establishment of the currency board in 1991 helped develop the Argentine financial system. Despite its strengths, the financial system remained vulnerable to real exchange rate misalignments and fiscal shocks. After 1998, Argentina fell into a currency-growth-debt trap. It tried to break away by focusing on growth, but failed to address the currency and debt components of the trap, dramatically raising uncertainty. This unleashed a depositor run, which lead to the abandonment of the currency board. We argue that an early exit of the currency board into dollarization would have likely prevented the run and substantially lowered the magnitude of the crisis. Dollarization would have preserved property rights and financial intermediation. Moreover, it would not have necessarily implied giving up nominal flexibility altogether, since dollarization could have been followed over time by "pesification at the margin."

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1. Introduction and summary

The recent and still developing Argentine crisis has already generated a heated debate among proponents of alternative explanations, each emphasizing different factors as the main underlying drivers. Feldstein (2002), for example, argues that the crisis was due to exchange rate overvaluation that could not be easily corrected and to an excessive amount of foreign debt. From a different perspective, Calvo, Izquierdo, and Talvi (2002) claim that a sudden stop in capital flows following the Russia crisis created a major real exchange rate misalignment and fiscal problems in Argentina that were difficult to address given the country's widespread currency mismatches, high indebtedness, and relatively closed economy. Perry and Servén (2002) find the origins of the crisis in multiple vulnerabilities (deflationary adjustment under the hard peg, high public debt and fiscal fragility, and hidden weaknesses in the financial sector), neither of which was decisive by itself. But all these factors reinforced each other in a perverse way under the post-1997 shocks, leading to a major overvaluation of the real exchange rate and pessimistic expectations regarding growth prospects. The economy thus entered a vicious circle from which it was very hard to pull out, particularly considering rigid and insufficient policy instruments, as well as faulty policy decisions. Mussa (2002), by contrast, emphasizes that, given the decision to adhere to convertibility, the post-1997 external shocks (including the appreciation of the U.S. dollar and the devaluation of the Brazilian real), and labor market rigidities, the "fundamental cause of [the] disaster […] was the chronic inability of the Argentine authorities to run a responsible fiscal policy," which led to a fast rise in the ratio of debt to GDP during the 1990s and up to the outburst of the crisis.

In this paper we argue that the relation between the currency board and the financial system—that is, the link between money and banking—is key to understand the unravelling of the Argentine crisis. In particular, it is crucial to explain the manner in which the crisis unfolded, its timing and severity, and the complications in managing and resolving it. This is because the currency board was not just a simple peg but rather a central part of the Argentine social contract that enjoyed deep political support, given its success in bringing about stability. Convertibility was also a "core" or "master" contract, in the sense that it underpinned a wide range of contracts across the whole economy.

It was clear that, from the point of view of Argentina's trade and productive structure, a rigid peg to the dollar was highly inconvenient.[1] But convertibility was not chosen in view of trade considerations. It arose in response to hyperinflation and against the historical background of repeated episodes of debasement of the domestic currency. As a result, the function of money as a store of value (and, hence, the confidence in, and sound functioning of, the financial system) as well the contracting function in the economy (and not just in regard of financial contracts) became inextricably intertwined with convertibility. A

[1] Argentina is subject to different shocks than the U.S. and thus it does not share with the U.S. an optimum currency area. In addition, Argentina has a substantial share of its foreign trade with countries whose currencies fluctuate vis-à-vis the U.S. dollar. Also, Argentina is a relatively closed economy with a large non-tradable sector; hence, it could potentially benefit much more (compared to very open economies with relatively small non-tradable sectors) from being able to change its nominal exchange rate to deal—through "expenditure switching" effects—with misalignments in the relative price of tradables to non-tradables.

disorderly break with the 10-year peg to the U.S. dollar was bound to have important implications on the banking system, debt markets, labor markets, and price setting more generally. It should therefore not be surprising that no government since 1991 had incentives to exit convertibility by breaking away from the one-peso-one-dollar commitment. It was also natural that, against this background, the particular way in which Argentina exited from convertibility in search for greater price and fiscal flexibility was to be an issue of paramount importance.

The currency regime and its connection with the financial system are essential to understand not only the crisis in Argentina but also the pre-crisis rapid growth and strengthening of the financial system, as discussed in Calomiris and Powell (2001). The decision of the government to peg the peso to the US dollar through a currency board in 1991 set into motion a process of rapid financial deepening. The currency and bank run unleashed by the Tequila (Mexican) crisis in 1995 underscored the need for greater capital strength and liquidity in the Argentine banking system, given the limits imposed by the currency board on the central bank to act as lender of last resort. To overcome those limitations, Argentina introduced banking system reforms quickly and effectively. The result was an internationalized and much more resilient banking system that became highly regarded worldwide. By the end of the decade, the system was, in the eyes of most analysts and despite the effects of the post-1997 recession on debtor capacity to pay, still sufficiently liquid and capitalized to withstand a significant range of shocks without endangering convertibility.

Nonetheless, the banking system had some important hidden weaknesses that undermined its capacity to deal with certain types of shocks, even under scenarios where the one-peso-one-dollar convertibility arrangement was maintained. First, it lacked prudential norms explicitly designed to address the adverse effects on the capacity to pay of the non-tradable sector of a major adjustment in the *real* exchange rate towards a more depreciated equilibrium level. In the absence of a nominal devaluation, such an adjustment had to take place through (slow) nominal deflation and unemployment. Second, the financial system became significantly and increasingly exposed to the public sector and thus vulnerable to a sovereign debt crisis. Third, the liquidity safeguards for the banking system, which were by design available to any depositor on a first come first served basis, proved inadequate to protect the payments system in the context of a depositor run.

A series of external shocks, including the Brazilian crisis and the appreciation of the US dollar vis-à-vis most currencies, as well as high fiscal spending during boom years, set the economy into a currency-growth-debt (CGD) trap by 1999. The currency became substantially overvalued, growth stagnant and, as a result, the public debt hard to service, feeding back into the perceived overvaluation through the gradual closure of international markets. The new government that assumed power in December 1999 tried to break free from the CGD trap mainly by reviving growth indirectly, through a tax-based fiscal adjustment and consequent confidence effects. It complemented fiscal adjustment with labor flexibility measures to overcome the exchange rate overvaluation, and with a new, IMF-supported international package to refinance the debt. However, labor flexibility did not materialize, the fiscal package had a deleterious effect on growth, the debt became

unsustainable, and there was a run on the currency and bank deposits. Policies taken after April 2001, when Mr. Cavallo became economy minister, also failed to revive growth. Instead, they dramatically raised uncertainty about the C and D legs of the trap, eventually leading to a depositor run, the "corralito" (deposit freeze), changes in presidents, a default on the government debt, and the abandonment of the currency board into floating.[2] These changes came with a massive destruction of property rights through the forcible (asymmetric) stock pesification.

We argue that an early (i.e., before 2001) exit of the currency board into formal dollarization would have probably prevented a run on the banks and the collapse of the financial sector. By contrast, the exit from convertibility via "stock pesification cum float"—i.e., the forcible conversion of dollar-denominated domestic contracts into peso-denominated ones, followed by the abandonment of the peg—was the most disorderly exit alternative. It largely explains why a crisis was turned into the unparalleled catastrophe we are now witnessing. The exit via stock pesification cum float was bound to ignite a run and require, as it in fact did, a freeze and/or the securitization of bank deposits. To be sure, while substantially lowering the probability of a systemic bank run, dollarization would have not spared debtors in the non-tradable sector from the deflation-induced erosion of their capacity to pay. It would thus have entailed loan quality decay and the associated banking system stress and restructuring needs. Moreover, though dollarization would have been beneficial to the financial sector, it remains to be determined whether it would have been beneficial to long-run growth.

We also argue that formal dollarization would have had to be followed over time by the introduction of greater flexibility, including though "pesification at the margin." That is, via the establishment of a new currency for transaction purposes, either by exploiting and shepherding the spontaneous emergence of a domestic currency under pressure (as the "patacón" in fact arose) or by introducing a new currency by design. The dollar would have remained as the main currency of denomination for financial contracts. Pesification at the margin is theoretically and empirically underpinned by the distinction between money as a store of value and as means of payment, which implies that financial dollarization admits a domestic currency for transactions. Appropriately managed, this bi-monetary system (dollar for savings, peso for transactions) can provide an emerging economy with a degree of flexibility to adjust fiscal spending to income and correct misalignments in the relative price of tradables to non-tradables. At the same time, this system can foster sustainable deepening in financial intermediation, provided that appropriate institutional and prudential innovations are introduced to deal with the specific risks in a dollarized financial system.

The option to dollarize became much more difficult for Argentina in 2001, when confidence collapsed, access to international financial markets shrank, the financial sector became more vulnerable to a government default, and deposits fled the system. It also became more difficult politically, as the government linked the peso to both the dollar and the euro. However, even in the more complex post-April 2001 context, it can be argued that

[2] The name "corralito" (little fence in Spanish) for the deposit freeze was initially adopted because deposits could be used freely inside the financial system but could not leave the system. Several modifications to the corralito followed; for example, the forcible reprogramming time deposits.

dollarization was still a better bet compared to forcible pesification of financial contracts, as the latter obliterates the function of money as a store of value with deleterious effects on financial intermediation.

An important caveat is that many of the arguments in our paper stem from the analysis of the counterfactual, that is, of what would have happened if Argentina had adopted different policies before the crisis erupted. By nature, this type of analysis is very difficult to back with real data and hard to prove. Nevertheless, we believe that a serious consideration of the different arguments presented in the paper may help to draw relevant policy lessons for the future, particularly for countries with highly dollarized financial systems.

The rest of the paper is organized as follows. Section 2 briefly describes the evolution of the Argentine financial sector during the 1990s. Section 3 analyzes the hidden weaknesses in the financial sector. Section 4 describes the government strategy up to the crisis. Section 5 assesses the options of pesification cum float and dollarization. Section 6 discusses the notion of pesification at the margin. Section 7 concludes.

2. Convertibility-compatible banking system

Convertibility, i.e., the legal and institutional monetary arrangements to ensure a one to one relation of the peso to the dollar, was introduced in Argentina in April 1991. Out of the ashes left by the hyperinflation, the one-peso-one-dollar rule quickly restored the function of money as a store of value and bank deposits grew steeply.[3] The sustainability of its early successes (manifested by a rapid taming of hyperinflation, a wave of optimistic capital inflows, and a vigorous resumption of growth) was transitorily but severely questioned during the Tequila contagion of 1995, when bank deposits fell by nearly 20 percent in a span of few weeks, nearly bringing down the financial system and convertibility with it.

The Tequila marked a turning point. The authorities responded by affirming convertibility as a central component of the social contract, while recognizing that its viability required a particularly resilient financial system. They launched a series of ambitious reforms to give effect to this conviction, as illustrated in Box 1. The results were impressive (see Table 1). So much that by 1998 Argentina ranked second (after Singapore, tied with Hong Kong, and ahead of Chile) in terms of the quality of its regulatory environment, according to the CAMELOT rating system developed by the World Bank (see Table 2).[4] By the end of the 1990s, a resilient banking system was the crown jewel of convertibility-induced reform. Convertibility did not lead to strong fiscal institutions, but few doubted that it had led to a shock-resistant banking sector.

[3] After having increased between 1991 and 1994, banks deposits continued rising from 17 percent of GDP by the end of 1994 to 26 by the end of 1998.

[4] The CAMELOT index combined separate rankings for capital requirements (C); loan loss provisioning requirements and definition of past-due loans (A); management (M), defined by the extent of high-quality foreign bank presence; liquidity requirements (L); operating environment (O) as measured by rankings with respect to property rights, creditor rights, and enforcement; and transparency (T), as measured by whether banks are rated by international risk rating agencies and by an index on corruption. Argentina ranked 1 for C (tied with Singapore), 4 for A, 3 for M, 4 for L, 7 for O, and 2 for T. For further discussion see World Bank (1998), pp. 39-61 and Appendix A.

The banking system was arguably in a very solid position by 1998, before the Brazilian devaluation of January 1999, and was still reasonably healthy through the end of 2000, despite the post-1998 continued economic contraction. In effect, common indicators of financial health, shown in Table 3, depict a well capitalized, strongly provisioned, and highly liquid banking system through the year 2000, although a system experiencing losses and increasingly burdened by bad loans after 1998.[5]

Convertibility became a central piece in the social contract and post-1994 reforms had created a banking system that, though costly, appeared convertibility-compatible in most respects. Towards the end of the decade, the system's prudential buffers were sufficient to withstand sizeable liquidity and solvency shocks—including a flight of about one-third of the system's deposits as well as a sudden (additional) default in up to 10 percent of the loan portfolio—without endangering the convertibility system.[6] The important presence of reputable foreign banks (they accounted for over 70 percent of total banking assets in 2000, as shown in Table 1) was broadly perceived to implicitly augment these liquidity and solvency cushions. These banks were expected to stand behind the capital and liquidity of their affiliates in Argentina, at least in the context of bad states of the world associated with bad luck. (Few were thinking then of bad states of the world caused directly by confiscatory government policy.)

The system's buffers were, of course, not sufficient to confront a major catastrophe. In Argentina, the disorderly breakdown of the one to one correspondence between the peso and the dollar qualified as a catastrophe. As the policy intent was to reinforce the viability of convertibility, it made no sense for the authorities to issue prudential norms that would dissuade the use of the dollar in financial contracts *per se*. The mantra of the system was "no more than one peso for one dollar, forever." To be sure, the markets did not take this mantra completely to heart—the peso problem continued throughout the 1990s, spiking during turbulent times (Figure 1). But the authorities could not signal the possibility of a *nominal* devaluation through prudential norms without undermining their own quest to raise the credibility of convertibility above all doubts. It was thus no secret that the disorderly breakdown of the one-peso-one-dollar rule would wreck the banking system.

3. Hidden prudential weaknesses given the commitment to convertibility

Assessing the strength of the Argentine banking system vis-à-vis a catastrophic departure from the one-peso-one-dollar social contract is in our view not productive. No financial system in the world is build to withstand major catastrophes of comparable magnitude. The strength of the Argentine system should rather be assessed in terms of its

[5] Profits turned negative already in 1998 and became deeply negative during 1999-2000 mainly because of the need to constitute provisions in the face of rising bad loans. NPLs rose to 10.2 percent of total loans in 2000, from 7.1 percent the year earlier, and the increase in provisions started to lag behind (Table 3).

[6] Table 3 puts systemic core liquidity (disposable international reserves of the central bank plus foreign exchange in cash or near-cash held abroad by banks) at about 38 percent of banking system deposits at end-2000. However, there was a significant variance in the distribution of such liquidity across banks. This may explain why the "corralito" was imposed at the end of 2001 before deposits had fallen by 30 percent.

capacity to resist a reasonably wide range of shocks without endangering convertibility. How did it measure against this standard? As it turns out, not completely well.

Empowered by hindsight we can now identify at least three crucial weaknesses in the regulatory framework. These shortcomings are identified through fair play—i.e., by taking as given the rules of the convertibility game. The shortcomings relate to the following items.

(i) The link between debtor capacity to pay and the deflationary adjustment to a more depreciated equilibrium real exchange rate.
(ii) The growing exposure of the banking system to government default.
(iii) The insufficient realization that *general* liquidity buffers do not fully protect the payment system from a run.

The first prudential shortcoming has to do with credit risk—the latent non-performing loans (NPLs) in the context of a misalignment of the *real* exchange rate (RER) relative to a more depreciated *equilibrium* level. Convertibility (or formal dollarization), as Roubini (2001) has correctly stressed, does not immunize a country from the balance sheet effects of a RER adjustment.[7] In particular, RER overvaluation is corrected under convertibility (or dollarization) slowly, through painful deflation and unemployment (particularly if rigidities in the labor market are significant), which certainly erodes the capacity to pay of debtors whose earnings come from the non-tradable sector.[8] Under the one-peso-one-dollar rule, this happens regardless of whether the loans in question are denominated in dollars or in pesos.

Hence, the first prudential shortcoming had much less to do with the failure to single out the currency of loan denomination and much more with the failure to recognize the special risk of loans to debtors in the non-tradable sector—a credit risk that would materialize in the event of significant adverse shocks that led to a deflationary adjustment. Taking the one-peso-one-dollar rule as a given, it would have been advisable for the authorities to establish tougher loan classification criteria, higher loan-loss provisioning rules, and possibly also a higher weight for the purposes of measuring capital requirements for loans to the non-tradable sector, *regardless of whether the loans were peso- or dollar-denominated.*[9]

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[7] It has to be noted that this shortcoming is not specific of a currency board but rather a consequence of financial dollarization, itself a manifestation of a weak domestic currency that leads to a *de facto* dollarization of financial assets. See De la Torre, Levy Yeyati, and Schmukler (2002) for a discussion along these lines.

[8] Deflationary adjustment in a currency-board (or dollarized) country lowers the value of non-tradable income in terms of tradables, which implies that the burden of the debt rises (capacity to pay falls) for the non-tradable sector. By contrast, in a country with a flexible exchange rate (i.e., where a fixed parity is *not* part of the social contract) and *without* a liability dollarization problem, the adjustment to a more depreciated equilibrium RER would come through nominal depreciation, which would be associated with an *improvement* (via debt dilution) in the capacity to pay of debtors in the non-tradable sector.

[9] Given that information asymmetry problems in buoyant times lead to rising bank exposure to the non-tradable sector without adequate internalization of risks, a system of counter-cyclical loan-loss provisioning requirements, like the one established at end-1999 by the Bank of Spain (Circular No. 9/1999 of December 17, 1999), could have been adapted in Argentina to address risks in loans to the non-tradable sector. The Spanish system requires a buildup of counter-cyclical provisions in good times (thereby curbing excessive dividend distributions in good times), which are shifted into specific provisions in bad times (without passing through the income statement) as the loan portfolio decays.

The second prudential shortcoming also has to do with credit risk. It consisted in the failure to isolate the solvency of the banking system from the solvency of the government. No matter how credible, a currency board (or dollarization) *per se* does not create fiscal discipline.[10] To the extent that banks hold claims on the domestic government, a fiscal and public debt crisis would immediately affect banking system solvency. However, one silver lining of convertibility (or dollarization) is that, in principle, it makes it possible to protect banking intermediation from the vagaries of the fiscal process, including an event of government debt default, *as long as* banks are not significantly exposed to domestic government risk. The reason is that the store of value that underpins financial intermediation in a currency board (or dollarized) country is ultimately the dollar, whose quality does not depend *directly* on the solvency of the domestic government.[11] This feature should have been harnessed in Argentina through prudential norms, all the more considering the country's recurrent fiscal problems. As described in Box 1, the authorities moved in this direction belatedly, in 2000, when they introduced mark-to-market requirements for government bond holdings and established a positive weight for loans to the government for the purposes of determining capital requirements. It would have been advisable to take this approach more aggressively and much earlier in the decade, and to complement it by limiting the amount of government debt that could count as part of the assets eligible to meet bank liquidity requirements.

Instead, the persistent fiscal deficit accelerated the placement of domestic debt with local banks as other sources of financing gradually run out. As Figure 2 illustrates, growing financing needs were met in the first half of the 1990s by recourse to the sale of state-owned assets and, when this source dried up, by borrowing in international capital markets. However, after the Tequila crisis, the government started to resort to domestic savings, notably pension funds and local banks, which steadily increased their share up to 2001 when, after the closure of international markets, they represented the main source of funds after multilateral organizations. In the process, the solvency of domestic financial institutions was compromised. The increasing reliance of public finances on domestic markets was not restricted to the federal government. As Figure 3 shows, a similar profile emerges in the case of the province of Buenos Aires, by far the largest in economic terms.

The third vulnerability and prudential regulation shortcoming relates to the insufficient realization by some analysts that *general* liquidity safeguards, even if high, do not adequately protect the payments system from a run. To be sure, high liquidity requirements, as those in effect in Argentina during the second half of the 1990s, enhance the resiliency of the banking system—they cushion the system vis-à-vis liquidity shocks and deter runs, thereby, reducing the scope for multiple equilibria. Thanks to its liquidity requirements, the Argentine banking system withstood a prolonged and severe process of deposit withdrawal during 2001. At the same time, however, the Argentine experience shows that once a run is underway, relaxing liquid reserve requirements can have adverse signaling effects that exacerbate the attack on the peso (instead of spurring credit growth as

[10] See, for example, Levy Yeyati (2001) or, for the case of Panamá, Goldfajn and Olivares (2000).
[11] In contrast, this condition cannot be obtained where the store of value is the domestic currency.

Minister Cavallo hoped for), further weakening confidence.[12] Moreover, Argentina illustrates that, as confidence collapses, a *general* liquidity requirement (available to all deposits on a first come first served basis) fails to protect the payment system.[13]

The lesson is sobering. In the absence of a credible lender of last resort, the payment system is vulnerable and can collapse under a run, even where liquidity is high but still a fraction of deposits and where liquidity is equally available to pay *any* deposit withdrawal. It thus would appear that, under a currency board and formal dollarization, the protection of the payment system from bank runs might actually require some form of a narrow-banking structure. That is, a structure where there is full liquidity backing for transaction balances (demand deposits). Liquidity would be earmarked to these balances and thus able to preserve the functioning of the payment system (and avoid deposit freezes and interruptions of the payment system), even in the extreme scenario where banks are unable to honor withdrawals of time deposits.

4. The government half-blind strategy up to the crisis

Right from the beginning, the De la Rúa administration (which assumed power in December 1999) was caught in a currency-growth-debt (CGD) trap. The currency was overvalued, growth was faltering, and the debt was hard to service. This trap was in no small part due to major external shocks. The Argentine peso appreciated sharply relative to most trading partners in tandem with the revaluation of the US dollar vis-à-vis European and emerging market currencies (particularly the Brazilian real). It is estimated that, by the year 2000, the Argentine RER was overvalued by about 50 percent.[14] The debt-to-GDP ratio was on the rise and, measured at the *equilibrium* real exchange rate, it was soaring.[15] The unyielding economic recession and rising unemployment fed pessimistic expectations regarding future growth and fiscal revenues, which in turn exacerbated the perception of a potentially explosive debt trajectory. Capital flows came to a sharp halt (not a purely exogenous phenomenon[16]) and this, together with doubts about fiscal viability, was reflected in sharp increases in the marginal cost of capital for Argentina (as measured by the spread of Argentine bonds over US Treasury bonds), further weakening growth prospects. All of this fed doubts about the sustainability of the one-peso-one-dollar commitment. In the absence of clear policy direction and convincing policy implementation, the elements of the CGD trap were easily liable to fall into a vicious circle.

[12] Many analysts cautioned about the potential negative effects of relaxing liquidity requirements. In effect, this issue was a major cause of dispute between the central bank and the ministry of economy.

[13] For a more detailed discussion on the limits of liquidity requirements, see Caprio, Dooley, Leipziger, and Walsh (1996).

[14] Perry and Servén (2002).

[15] Perry and Servén (2002) calculate that, relative to a benchmark analysis of fiscal sustainability, the use of the equilibrium RER adds 24 percentage points to the public sector debt to GDP ratio in 2001, and leads to an average increase of about two percentage points in the annual primary fiscal surplus required (in 2000-2003) to attain inter-temporal fiscal solvency.

[16] Perry and Servén (2002) demonstrate that: (i) during 1999 Argentina was not affected as severely as other countries in the Latin American region by the slowdown in capital flows; and (ii) the sharp reversal of capital flows to Argentina in 2000-2001 was mainly endogenous to domestic factors.

The government's strategy to break free from the CGD trap focused on reviving growth, although the means to achieve this objective changed dramatically after April 2001, when Mr. Cavallo took the post of Minister of Economy. (See Box 2 for a chronology of the political and economic events.) During 2000, growth resumption was sought indirectly—trying to regain investor confidence through fiscal adjustment, including the "impuestazo" in January 2000. It was hoped that improved confidence would eventually lead to more capital inflows and growth, making the debt and current account sustainable. To be sure, the authorities also tried to address the problem of currency overvaluation directly, through some flexibilization of labor markets.[17] In addition, as confidence was not restored and growth failed to pick up, the authorities shifted their attention towards calming fears of a possible debt default. The December 2000 IMF package (advertised as a US$40 billion package) was negotiated with this latter objective prominently in mind. However, none of these actions achieved the expected results and hopes of reviving growth faded away.

Minister Cavallo brought his prestige to attempt the rescue. Empowered by Congress with special powers, he focused on rekindling growth, but this time directly, through heterodox measures. These included imposing a tax on imports and subsidizing exports (a fiscal devaluation for trade flows), lowering reserve requirements, and announcing the eventual peg of the peso to the dollar *and* the euro (with equal weights), once these two currencies reached parity. From hindsight, it is clear that the growth-focused strategy, particularly in Mr. Cavallo's heterodox version, was half-blind or naïve. It not only did not yield growth, it also *escalated the uncertainty about the two other components of the CGD trap, namely the uncertainties about the debt and the currency arrangement.*

Doubts about the maintenance of convertibility soared—the one-peso-one-dollar rule had already been broken through the back door for trade transactions and it was feared that it could be broken also for financial transactions. In addition, Mr. Cavallo had pushed successfully for the resignation of central bank president Pedro Pou, who was viewed by investors as a strict guardian of monetary and banking system soundness. Moreover, Mr. Cavallo used his special powers to reform the central bank charter, removing limits on the ability of the central bank to inject liquidity, thereby effectively dismantling the money-issuance rule that underpinned convertibility.[18] Thus, the talk about a "change in the convertibility model" escalated dramatically, with high uncertainty as to what would the successor model be. The growing doubts about the maintenance of the one-peso-one-dollar rule are illustrated by Figure 1, which shows that the average currency premium increased

[17] The approval of the labor market reform was linked to a bribery scandal, in which senators were accused of receiving payments from the government to approve the law. The scandal was unresolved, leading to the resignation of vice president Carlos Alvarez.

[18] Prior to the April 2001 amendments to the central bank charter, dollar-denominated, internationally traded Argentine government bonds could be treated as part of the country's disposable international reserves, as long as such bonds did not exceed 33 percent of the total. After the amendments, the claims on the government received by the central bank (in repo or as collateral) in the context of its liquidity operations with the banking system no longer counted as part of the maximum of 33 percent of disposable international reserves. Thus, the April 2001 amendments effectively enabled unlimited injection of lender of last liquidity without hard dollar backing. In practice, however, the claims on the government that the central bank received as part of its lender of last resort activity in 2001 did not exceed the 33 percent limit. Nevertheless, the amendment is at least partly responsible for the increased doubts that the currency board would be maintained.

sharply *and* became highly volatile after April 2001, reaching very high peaks when Mr. Cavallo introduced some new measures. These doubts are also illustrated by Figure 4, which shows a post April 2001 pronounced rise in the share of dollar deposits in total deposits.

At the same time, uncertainty about the D component of the CGD trap escalated as the government procrastinated in taking a decision on the debt front. Instead of recognizing that debt restructuring was becoming a necessity following the failed attempts to restore growth, the government averted debt service arrears by draining the liquidity of the financial system. In April 2001, the government used moral suasion to place US$2 billion of bonds with banks in Argentina, allowing banks to use those bonds to meet up to 18 percent of the liquidity requirement. The banking system thus became substantially less liquid and much more exposed to a government default. Total banking system claims on the government rose gradually from less than 10 percent of total bank assets at the end of 1994 to 15 percent at the end of 2000, jumping to nearly 30 percent by end-2001, as shown in Figure 5. This, in turn, heightened concerns about a potential abandonment of the currency board. As choices to finance the deficit through debt rapidly shrank, the specter of money printing loomed bigger.

In the process, the future of public finances, of the banking system, and of the currency became tightly linked. This link foreshadowed the catastrophe, the unthinkable—a disorderly abandonment of the one-peso-one-dollar in an economy with widespread liability dollarization (i.e., dollar debts of non-dollar earners). As a result, the little confidence that remained was completely splintered, particularly once it became clear that the government had completely lost access to finance and was forced to announce a "zero deficit" target for the second half of 2001. The crisis exploded as investors and depositors ran for the exit, as illustrated in Figure 6. This run forced the corralito and a change in government at the end of 2001.[19]

In sum, as the strategy of reviving growth failed, the government also failed to craft an exit strategy for the CGD trap. Rather, it exacerbated the uncertainty about the C and D components of the trap, which precipitated the crisis. But was the crisis an inevitable outcome? In the next section we argue that an early definition regarding the currency regime would have significantly increased the chances of avoiding a financial meltdown of the kind that occurred. Such an early definition would have at least reduced the trap to a GD trap and probably could have forestalled the run on the banking system.

5. Pesify or dollarize?

To address the C component of the CGD trap, the government could in principle have moved in either one of two directions: (i) float cum stock pesification or (ii) dollarization.

Due to widespread balance sheet mismatches (dollar debts of non-dollar earners), exiting convertibility by floating required the prior pesification of existing domestic financial contracts by decree (stock pesification). Without prior stock pesification, a significant and

[19] The fact that the imminence of the crisis lasted several months made the crisis worse because depositors (mostly large and informed ones) had time to withdraw around 18 percent of the deposits, leaving only small depositors in the system.

discrete devaluation would have immediately wrecked debtors in the non-tradable sector and, hence, the banking system.[20] Stock pesification and float was indeed one way to address the C component of the CGD trap. It was the alternative chosen by the Argentine government under pressure at the beginning of 2002, and its destructive power is now evident.[21]

Was stock pesification cum float a feasible alternative for earlier, more tranquil times? Would it have been less destructive then? We have serious doubts that there is an affirmative answer to these questions. To start with, forcible stock pesification cum float necessarily implied a departure from the one-peso-one-dollar rule, a central piece of the Argentina social contract. This was a "core" or "master" contract that underpinned a wide array of contracts throughout the economy, sustained the function of money as store of value (on which financial intermediation hinged), and commanded deep political support. No government had an incentive to implement such a departure in tranquil times. Forcible pesification cum float was therefore a feasible alternative only for turbulent times. And it was an alternative that almost by necessity had to be implemented in the context of a change in government. In addition, the arbitrary and massive destruction of property rights implied in stock pesification meant that any anticipation of it would have triggered a run. Hence, stock pesification cum float would have required the simultaneous establishment of a deposit freeze or securitization as well as widespread capital controls in order to keep depositors and investors from fleeing.[22]

The Argentine experience illustrates that the destructive power of stock pesification goes well beyond the (hopefully transitory) disruption of the payments system. It obliterates the function of money as a store of value, on which financial intermediation hinges. Deposits were also frozen during the Ecuadorian crisis of 1999 and the payment system severely disrupted, but deposits were not pesified, and this contributed to a quick regeneration of financial intermediation once formal dollarization established the dollar as the store of value. The forcible pesification of domestic financial contracts in Argentina, by contrast, was a desperate attempt to escape what Eichengreen and Hausmann (1999) call the "original sin" by committing a graver sin—the murder of money as store of value.[23] Pesified Argentina now waits for a sort of miracle, that is, the resurrection of the peso as a store of value and, with it, the regeneration of financial intermediation.

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[20] Ecuador's 1999 crisis illustrates the dire consequences of floating in the context of a weak fiscal position and widespread currency mismatches (dollar debts of non-dollar earners). The crisis deepened dramatically as nominal devaluation and debtor insolvency were caught in a feedback loop. See De la Torre, García-Saltos, and Mascaró (2002).

[21] In early 2002 Argentina stock pesified asymmetrically. In particular, bank loans were pesified at 1:1 and deposits at 1:1.4. On impact, this decision transferred part of the mismatch in the balance sheets of debtors in the non-tradable sector to the balance sheets of banks, resulting in less losses than otherwise to depositors.

[22] A negotiated restructuring of government and corporate debts to foreigners appears inescapable under stock pesification. This is because a significant part of Argentine corporate debt and most of the government debt was in dollars *and* subject to foreign jurisdictions, so it could not be forcibly "pesified."

[23] As defined by Eichengreen and Hausmann (1999) the "original sin" refers to the condition of a country that has a *weak currency*, defined by the inability of issuing peso debt in international markets. As a result, such country is tragically trapped between currency mismatches (it can only issue long-term debt in dollars) and maturity mismatches (local markets only accept short-duration peso debt).

In sum, stock pesification cum float was arguably: (i) not an alternative that could have been feasibly implemented in tranquil times or without a change of government; (ii) an alternative that would have in any case provoked a run, requiring a deposit freeze of some form; and (iii) a deleterious alternative for financial intermediation. All these reasons lead us to believe that stock pesification was the least desirable and feasible alternative.

Was dollarization then a better option? The previous arguments, in sharp contrast with a number of other analysts,[24] support the view that dollarization was indeed a superior alternative.[25] To be sure, dollarization would have not averted the slow deflationary adjustment to the more depreciated equilibrium *real* exchange rate, with consequent capacity to pay problems and defaults among dollar debtors with incomes in the non-tradable sector (namely, the government and part of the private sector). The move towards dollarization would have, thus, not spared Argentina from significant banking system stress and even some individual bank failures. However, debtors in the non-tradable sector and creditor banks would have had time to adjust and the adjustment process would not have necessarily triggered in a run.

In addition, dollarization would have been consistent with the Argentine social contract based on the long-term commitment to one-peso-one-dollar, with salutary implications for depositor confidence and even for political viability. Depositor confidence would have been boosted not just because the perceived risk of deposit confiscation would have been dimmed significantly, but also because the option-value of foreign bank access to their parent's capital and liquidity would have been better protected. That is, even if a run would have occurred, foreign banks would have likely been more willing to stand behind their Argentine affiliates, compared to the current situation marked by confiscatory (and asymmetric) stock pesification.

Dollarization, though clearly not easy politically, would have arguably been within the scope of the government in power inasmuch as it respected the one-peso-one-dollar rule. In this sense, there is an asymmetry in the political economy of dollarization versus stock pesification. It is generally less costly politically for developing-country governments to maintain an exchange rate parity than to break it. That is why pegs tend to be abandoned during crisis times. This argument is *a fortiori* stronger in the case of Argentina, given the crucial relevance of the currency board to the operation of the financial system.

The dollarization alternative had been considered by the Argentine government in 1999-2000, but lost ground afterwards partly due to political polarization. (It was construed as a symbol of support to Mr. Menem.) By contrast, against a background of continued recession and increasing RER overvaluation, the proposal of stock pesification cum float gained ground.[26] Indeed, the feasibility and potentially salutary effects on depositor

[24] See, for example, Roubini (2001) and Hausmann (2001).

[25] Advocates of this view include, among others, Dornbusch (2001), Calvo (2002).

[26] It in fact became somewhat popular in academic and policy circles after Prof. Hausmann's public recommendation to Argentina (first presented in the October 2001 Latin American and the Caribbean Economic Association Meetings in Montevideo) to "pesify" all financial contracts, index them to the consumer price index, and then let the peso float freely (Hausmann 2001). This proposal failed to anticipate that it would

confidence of dollarization narrowed during 2001, but did not disappear. A run became more likely once the liquidity of the financial system had been raided (causing a significant step increase in banks' exposure to the government) and once the government was clearly headed towards default in the context of no access to capital markets.[27] A default on the government debt in such circumstances would have made depositors skittish, and a run was a distinct possibility, but not a necessity.

Why was a run less likely under dollarization even in 2001? Any answer to this question is, of course, highly speculative. Nonetheless, we are inclined to believe that the answer is a cautious yes. This is in part because, while deposit withdrawals in 2001 were probably motivated by heterogeneous expectations, much of the depositor activity appears to have reflected fears of a nominal devaluation. Some depositors feared a freeze on deposits or pesification, therefore withdrawing deposits from the banking system. But others, fearing a devaluation, just withdrew their peso deposits or converted them into dollar deposits. In effect, in the months leading to the explosion of the crisis the share of dollar deposits soared, as depositors withdrew more peso deposits than dollar deposits from banks and the currency premium increased (Figure 4). Moreover, a run would have been less likely (or less pronounced) under dollarization to the extent that depositors believed that the currency would overshoot once floated.

The cautious presumption of no run under dollarization, even in the face of a default in government debt, appears not unreasonable in light of Ecuador's experience. In Ecuador, the sole *announcement* of dollarization in January 2000 (formal dollarization was put into law only in March 2000) stopped the depositor run on its tracks and quickly reverted it. This happened even though the Ecuadorian government was in open default (the debt restructuring agreement was signed several months after the dollarization announcement), most banks were highly exposed to the government, and it was no secret that many of the large banks were completely insolvent. There is no obvious reason to believe that developments would have been different in Argentina following dollarization, particularly considering that the Argentine banking system was unquestionably in a substantially better shape than Ecuador's. Moreover, to reinforce the stabilizing effects of dollarization on depositor behavior, Argentina could have taken additional positive steps to relax the link between banking system solvency and fiscal solvency.[28]

In all, it is difficult to escape the conclusion that, from the point of view of preserving healthy links between money and banking, the more obvious non-traumatic strategy to break free from the CGD trap would have included an early dollarization. This exit strategy would have been easier to implement at the time when Argentina still had some access to international financial markets and before Mr. Cavallo announced the inclusion of the euro in the peso peg, thereby fueling currency uncertainty to very high levels (Figure 1).[29] A

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inevitably lead to a deposit freeze. The proposal, moreover, seriously underestimated the difficulty of establishing the peso as a store of value in order to re-generate financial intermediation going forward.

[27] The failure to secure debt rollover in July 2001 was probably the threshold.

[28] A decree passed in 2001 (Presidential Decree 1005) to enable the use of the amounts falling due in the government debt to pay taxes would have helped in this regard.

[29] For a detailed chronology of the impact of political and economic announcements on the currency premium, see Schmukler and Servén (2002).

relatively early decision to dollarize would have better enabled the government to obtain international financial support to guarantee the continued functioning of the financial system. Dollarization while capital markets were not completely closed to Argentina could have even prevented a default on government debt. Though painfully, the banking system could have absorbed over time the losses associated with rising NPLs as the real exchange rate adjusted towards equilibrium through deflation.

However, a move to dollarization would have needed to be complemented by other factors, given the inconsistency between the peg to the dollar and Argentina's trade and productive structure (see footnote 1 above), and the limits to fiscal adjustment in a recessionary context. Initially, the main function of dollarization would have been to stabilize the financial system and stem the run. Over time, however, the premium of introducing some nominal flexibility would have risen. As a result, dollarization would have been increasingly considered as only one step towards building what we elsewhere call a viable "dollar trinity," which combines the dollar as the store of value, with increasing price flexibility, and sound institutions (De la Torre, Levy Yeyati, and Schmukler 2002).

6. Dollarization, nominal flexibility, and pesification at the margin

From the previous discussion it follows that dollarization was the best available alternative provided that it would have been followed over time by greater nominal flexibility. In this section, we argue that the needed flexibility could have been gained by "pesification at the margin"—i.e., the introduction of a new domestic currency for transactions purposes either spontaneously or by design—in contrast with the typical dollarization argument that assumes that flexibility is achieved naturally over time.[30]

Dollarization advocates typically downplay some important aspects related to the success of the dollarization avenue, or simply state them as obvious preconditions.[31] In particular, they acknowledge the need for greater nominal flexibility in light of the limitations imposed by the loss of the exchange rate as an adjustment mechanism, and the need of fiscal discipline consistent with the loss of the inflation tax. Moreover, they often advertise dollarization as an irrevocable decision that, inasmuch as it restricts monetary financing of the budget, can help foster fiscal discipline, inducing governments to adjust nominal fiscal spending more flexibly.

This latter view is naïve and ultimately wrong, as the Argentine experience illustrates. To start with, nominal flexibility in fiscal spending is seldom verified in practice (in either emerging or industrial economies). Political realities severely constrain the margin to reduce nominal fiscal expenditure, especially in the context of a recession. This was decisive factor

[30] Roubini (2001), for instance, argues that "as dollarization at the current parity does not prevent the balance sheet effects from occurring over time and it does not even solve the short-run competitiveness problem while is has also undesirable long-run consequences, it is the least desirable alternative." Our argument stresses that pesification at the margin could avoid the disastrous effects on financial intermediation of a sharp devaluation (understated by Roubini) while enabling a degree of nominal adjustment to deal with RER overvaluation.

[31] Quoting Calvo (2002), hard pegs (of which dollarization is an example) have "to be supplemented by adequate institutions and regulatory conditions. For example, it is essential that government wages and regulated prices show a high degree of flexibility."

in the evolution of the Argentine CGD trap (see above). Nominal adjustment of the budget was achieved only to a limited extent at the expense of a protracted recession that in the end made the external debt unsustainable. The reduction in public expenditure that should have accompanied the curtailment of access to external financing did not go beyond an insufficient and politically costly wage cut never meant to be permanent.[32]

As a result, the restriction on monetary financing of the deficit was eventually violated through a somewhat compulsory placing of domestic debt and, ultimately, through the issuance of public and provincial paper that differed from currency only cosmetically. As Figure 2 shows, once the funding capacity of the domestic markets was exhausted, the government resorted to the issuance of small-denomination federal bonds (*Lecop*) redeemable for federal tax payments, in a failed attempt to preserve the printing restrictions imposed by the currency board. Similarly, in the case of the province of Buenos Aires, financing needs exceeding local revenues and federal transfers were eventually met by the placement of provincial bonds in domestic markets and the launch of the province's own small denomination paper, the *patacón* (Figure 3). Thus, the persistent fiscal imbalance, far from adjusting to the budget constraint imposed by the monetary regime, *de facto* circumvented it, rendering the regime all but a formal arrangement.

In fact, the previous charts understate the surge of local money printing. As Table 4 indicates, a number of other provinces adopted similar mechanisms to finance their deficits, and, as a result, the total stock of these quasi-monies reached more than 2,600 millions of Argentine pesos or about 23 percent of total pesos in circulation by the end of December 2001, and had already doubled by the end of March 2002.

Two lessons can be drawn from this evidence. Firstly, there are perils in imposing a hard budget constraint when the government is incapable of squaring its fiscal accounts in the short run. One key peril is the spillover of fiscal problems into the financial system. As noted earlier, on its way towards outright monetary financing of its budget, the Argentine government dramatically increased the exposure of the banking sector to fiscal default.

Secondly, the convertibility law was easier to sidestep than originally believed. This is apparent from the ease with which the Argentine government in need of funds resorted to money printing with another name. It is easy to see that the same could have happened under dollarization. Dollarization *per se* would not have overcome the CGD trap as long as the fiscal imbalance was a given (at least in the short term) and not easily reversed by a reduction in nominal public expenditures. Dollarization too would have likely been accompanied by a proliferation of local quasi-monies that would have reflected the simple fact that a fiscal deficit cannot be eliminated merely by a monetary arrangement. Quasi-monies more than a problem in themselves are, therefore, a symptom of a deep inconsistency between a strict monetary framework and the nominal rigidities that this framework cannot magically eliminate.

[32] Public sector wages and contracts in the federal government were cut by 13 percent in the second semester of 2001, but the reduction could not be extended to provincial workers. Moreover, although the cuts were meant to adjust endogenously in order to meet the zero deficit rule, further reductions were judged to be politically unfeasible and were never implemented.

Indeed, not only did the recourse to printing quasi-monies relaxed the cash flow constraints faced by the public sector, but it also worked as an adjustment mechanism for the private sector, which rapidly embraced the new bills as an instrument to reduce labor costs circumventing labor market rigidities. However, the fact that most of these quasi-monies were accepted for tax payments at face value, coupled with the convertibility of the peso in which they were denominated, limited the amount of nominal flexibility that could be achieved through its use to a secondary market discount that never exceeded 10 percent.[33]

In the previous section we argued that dollarization would have been a better option to stem the depositor run and deal with the C component of the CGD trap in Argentina. But dollarization, of itself, would not have led to nominal flexibility in fiscal spending and could have been highly inconvenient—and possibly unsustainable—at a time when a large adjustment in the *real* exchange rate to a more depreciated equilibrium level was required. However, dollarization does not necessarily imply that there is no partial way out of the greenback (as discussed in Levy Yeyati and Schmukler 2001).

This partial way out would typically take place through pesification at the margin, as was already occurring in Argentina, albeit in a disorderly manner, through the issuance of quasi-monies. That is, following the formal dollarization of existing financial contracts, partial "de-dollarization" could materialize in practice by exploiting and giving order to the spontaneous emergence of quasi-monies (such as the *Lecop* and *patacones*) or by the direct introduction of a new currency by design. The quasi-money that may provide a government with a spontaneous escape valve out of nominal fiscal rigidities in the face of a drying up in financing can also be turned into an opportunity for recomposing a degree of sustainable flexibility (to adjust the budget as well as the relative prices of tradables to non-tradables) in a financially dollarized emerging economy.

To be sure, the introduction of a new currency by design may find political support only once the crisis is well underway. Even at that stage, it is more likely that the process of pesification at the margin in a currency board or dollarized country would start with the spontaneous printing of quasi-monies.[34] However, it seems plausible that, as part of crisis management and resolution, once a quasi-money has emerged spontaneously—in reflection of nominal rigidities and under severe cash flow constraints—the authorities could shepherd it and eventually formalize it, at least into a currency for transactions. The success of this effort would, of course, hinge on the simultaneous implementation of a comprehensive program with improved fiscal policies and the requisite institutional and structural reforms.

In the specific case of Argentina, pesification at the margin would have been preceded by stock dollarization—i.e., the dollarization of all existing financial and non-financial contracts—to stem the run and stabilize financial conditions. Political support was (and still is) weak for this type of option, however, possibly due to the fact that the debate in Argentina and elsewhere continues to revolve around the two extreme views (stock

[33] The discount was due more to a liquidity premium than to the associated credit risk.

[34] It is hard to conceive how the authorities of a dollarized country may have the incentives or the political backup to reintroduce a new local currency by design.

pesification cum float and plain vanilla dollarization). At any rate, while the precise manner in which pesification at the margin would have been formalized after stock dollarization is a valid matter for debate, the basic process is somewhat of a moot point, since local currencies could have been easily recycled into one new national money.[35]

The new currency would have been part of a bi-monetary system, in the sense that its use would have been circumscribed, at least initially, to transaction purposes, with the dollar used as the store of value for savings. The new currency would have realistically been externally non-convertible. It would have fluctuated against the dollar. Moreover, it could have been granted legal tender status and, possibly also, exclusivity for tax payments purposes, so as to consolidate its transactional demand.

Pesification at the margin is certainly not a panacea, but it would no doubt be a way to allow a degree of flexibility in a dollarized system. Pesification at the margin through a new currency would provide flexibility to adjust fiscal spending to income *and*, as long as there is less than complete indexation of wages to the dollar, to correct misalignments in the real exchange rate (the relative price of tradables to non-tradables).[36]

The logic of pesification at the margin is grounded theoretically and empirically in the distinction between money as a means of payment and money as a store of value. Indeed, the money used for payments transactions needs not be the same as the money used for savings and to organize financial intermediation. The analysis in Ize and Parrado (2002) attests to such theoretical point. Empirically, the distinction is commonly observed—Perú, Bolivia, Uruguay, Costa Rica, Guatemala are among the countries in Latin America where the domestic currency is used for transactions while the dollar is the currency of denomination for most financial contracts. The logic is reinforced by the post-devaluation experience in Argentina. The legal and political obstacles that hampered the government's strategy forcibly to stock pesify clearly indicate the limitations of establishing the local currency as *store of value* in a financially dollarized economy. In contrast, the transactions demand for the domestic currency (both for the old peso and the quasi-monies) remained relativelt stable even through the depths of the Argentine crisis.

Pesification at the margin can become a relevant alternative for some emerging economies, particularly considering that financial dollarization has been a pervasive phenomenon in emerging markets for some time, and has been growing *pari passu* with financial globalization.[37] To the extent that it admits pesification at the margin, dollarization could arguably be turned into a viable alternative (if accompanied by appropriate institutional improvements) for some open emerging economies with highly dollarized financial systems that are trying to survive in the midst of increasingly globalized and volatile financial markets.

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[35] We deliberately abstract from the problem of an unfair wealth transfer between different issuers once currencies are monetized by a central bank. Conceivably, such transfers could be undone either within the monetization scheme or directly through countervailing budgetary transfers.

[36] Interestingly, dollar indexation of wages is rare even in the most financially dollarized emerging economies.

[37] Financial dollarization, following Ize and Levy Yeyati (2001), denotes the holding by residents of foreign currency-denominated assets and liabilities.

Pesification at the margin can help mitigate the oft-seen inconsistency between financial structure and trade structure. That is, the inconsistency housed by countries whose trade and productive structure clearly argues against pegging to the dollar (see footnote 1) but where a long history of instability and faulty policies has led to not-easy-to-reverse financial dollarization. Moreover, a bi-monetary scheme (peso transactions and dollar savings) can also be the basis of a new design of prudential norms for dollarized financial systems—norms that are needed to address the type of issues discussed in section 3, including the challenge of preserving the payments system from the financial vulnerabilities arising from credit risk in the non-tradable sector.[38] Pesification at the margin, however, leaves open the complex question of the currency of denomination for financial intermediation (particularly for the non-tradable sector) in the future.

In sum, even under the extreme turbulence of the second half of 2001 in Argentina, arguments based on the need to preserve viable links between money and banking and avoid a run militate in favor of *de jure* dollarization over forcible pesification. However, absent other sources of flexibility, dollarization would have been eventually undermined by a massive issuance of provincial bonds. Accordingly, the need to generate a minimum nominal flexibility to undo de CGD trap would have benefited from the creation of a new, non-convertible currency to be used as a means of payment, possibly based on the monetization of the small-denomination bonds that proliferated when other sources of deficit financing run out. The introduction of a new currency at the margin, initially for transactions, with legal tender privileges under the control of the Central Bank, either by design or by the consolidation of one or more of the existing local bonds, would have provided a much less disruptive way out of the rigid constraint imposed by the one-to-one rule.

7. Final remarks

After the reforms following the Tequila crisis, the Argentine financial system was relatively strong. The system was prepared to work well under the currency board, or under full dollarization, although there were some hidden weaknesses that were not acknowledged ex-ante through prudential norms.

The procrastination in addressing the currency and debt components of the currency-growth-debt (CGD) trap, that caught Argentina after 1998, helped precipitate a financial crisis. As growth did not pick up and external credit dried up, the options to the government narrowed sharply and any decision became more costly. The crisis could probably have been avoided or minimized with an early dollarization, provided that it was followed over time by the introduction of greater nominal flexibility, which could have been achieved in practice through pesification at the margin.

The costs and benefits of dollarization should have been evaluated at least under four dimensions.

[38] De la Torre, Levy Yeyati, and Schmukler (2002) discuss possible solutions to these problems, including a narrow banking-type financial structure or a separation of transaction and investment banks by currency of intermediation.

a. *Government default probability and severity*

The extent of default is likely to be larger under stock pesification cum float because tax revenues are in pesos and the real exchange rate tends to overshoot.

b. *Financial system stability and functioning*

Dollarization would have ensured a store of value, on which financial intermediation hinges. It would have removed fears of deposit freezes and stock pesification, making bank runs much less likely.

c. *Growth*

Short-run growth: By maintaining the financial intermediation function, dollarization would have avoided a payment system collapse (deposit freeze) and could have provided a short-term rebound in growth, due to return in confidence (as illustrated by Ecuador). Dollarization would have provided a clear and fast signal on the new regime for the economy. Stock pesification cum float, by contrast, takes more time to achieve credibility, since the government must gain reputation by building a consistent track record.

Long-run growth: Whether stock pesification cum float comes out ahead of dollarization depends on how much long run growth is derived from real wage flexibility, on the one hand, or the access to low-cost finance, on the other. It also depends on how much long-run growth depends on the institutional framework and the non-violation of contracts. Nominal flexibility could be increased over time under dollarization, mainly through pesification at the margin. But it would not likely reach the degree of flexibility that a well-functioning flexible exchange rate regime can afford.

d. *Political economy*

Dollarization would have maintained the basic social contract that every peso was worth a dollar. In that light, it was politically less difficult to dollarize than to stock pesify. Stock pesification could only be done, as the experience shows, in the midst of a crisis and in the context of a change in government. There were no incentives for any government to break the parity and freeze deposits if the economy was not under severe stress. The potential long-run benefits of having a flexible exchange rate appear to be hardly a compensation for the huge short-run costs of forcible stock pesification, particularly considering that dollarization is not inherently in conflict with pesification at the margin.

To conclude, the option to dollarize would have probably limited the costs of the crisis, although it would not have spared Argentina from significant adjustment costs. In the end, the country needed to adjust to the new equilibrium real exchange rate. The analysis in

this paper suggests that the costs of adjustment could have been lower under dollarization plus pesification at the margin than under stock pesification. To the extent that the transactions demand for this new currency was non-zero, as the demand for many provincial bonds in Argentina has shown, this option would have avoided breaking all dollar-based domestic contracts in the economy and, with it, would have averted the collapse of the financial system. At the same time, through pesification at the margin, this alternative could have yielded a degree of flexibility with which to adjust government spending to income as well as to correct the misalignment of the *real* exchange rate, without having to destroy financial intermediation in the process.

Though this paper has discussed the different options available to Argentina, further analysis on how to exit a currency board or dollarization without a massive violation of property rights is warranted more generally. Such analysis would be of particular relevance to emerging economies whose financial systems are highly dollarized but whose trade and productive structures make a dollar peg highly inconvenient.

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Box 1. Argentina: Post-1994 Banking System Strengthening

Effective and ambitious financial sector reforms vigorously adopted in the second half of the 1990s were translated in a major consolidation and internationalization of the banking system (Table 1). The number of banks shrunk from 166 in 1994 to 89 in 2000. Banks exited not just through mergers and acquisitions but also through bank closures. The number of public banks decreased from 32 in 1994 to 15 in 2000, reflecting an aggressive privatization process of provincial banks. The number of branches of foreign-owned banks increased from 391 in 1994 to 1,863 in 2000, while the share of these banks in the system's assets rose from 15 to 73 percent.

This process was accompanied and underpinned by an acceleration in the pace of legal, regulatory, and supervisory innovations. The main improvements in the regulatory and contractual environment for the banking system are briefly described below.

1. A quantum leap forward in a market-friendly approach to prudential oversight

Much of this process was organized around the innovative BASIC program (in Spanish: B = bonos; A = auditoria; S = supervision consolidada; I = información; and C = calificadoras de riesgo). BASIC was an Argentine-bred approach, superimposed on internationally recognized CAMELS-based supervisory methodology, to enhance the complementarity between official and market monitoring. The "B" in BASIC emphasized the requirement on banks to issue subordinated debt so as to generate better price signals of bank risk. The "A" stood for a program to improve internal and external audits. The "S" referred to the implementation of consolidated supervision of financial conglomerates. The "I" reflected a major program to enhance the quality, depth, coverage, and dissemination of information—through higher reporting standards for financial statements, broader and easily accessible information on debtors, and more stringent information requirements on financial group structure and ownership. And the "C" referred to the requirement on larger banks to have annual ratings by international rating firms. Partly as a result of the implementation of the BASIC program, it was broadly believed that Argentina in the late 1990s was near full compliance with the Basle Core Principles for Effective Banking Supervision.

Particularly noteworthy in the Argentine regulatory reform was the introduction of rigorous system of capital requirements, defined to absorb both credit and market risks, and significantly more stringent that the Basle minimum standard. The system featured various components. One component was minimum capital requirement for credit risk of 11.5 percent of risk-weighted loan exposures to the private sector, with variable weights within each loan class depending on the risk of individual loans, as measured by the interest rate charged on the loan. This ratio, moreover, was augmented by a factor for banks receiving lower CAMEL ratings. In addition, during 2000, positive risk weights were introduced for loans to the government and mark to market requirements were introduced for holdings of government bonds. Finally, capital requirements were set separately to absorb unexpected fluctuations in interest rates and in the prices of private sector securities.

Also noteworthy were the stringent liquidity requirements, high by international standards, and intended to work counter-cyclically—i.e., to be tightened during buoyant times and relaxed during times of systemic liquidity squeeze. By 1998, most deposits (those with maturities of less than 90 days) required a 20 percent (remunerated) reserve.

2. A "best practice" scheme for troubled bank resolution

After the Tequila, Argentina introduced key institutional innovations to enhance the bank exit framework, including Art. 35bis of the banking law—which created an efficient system for bank closure and resolution—and a privately managed limited deposit insurance scheme (SEDESA). This framework greatly contributed the consolidation of the banking system through the exit of unviable banks. Argentina became a

salient case in the region where unviable banks (and not just small ones) were actually closed—between 1995 and 2000 about 20 banks were closed using the powers of Article 35bis.[39]

3. Privatization of provincial banks

Between 1994 and 1998, 16 provincial banks were privatized within a process that, though not perfect, was among the most aggressive and successful in the region.[40]

4. Contingent repo facility

This was an over-collateralized facility, structured in order to partially compensate for the virtual lack of a domestic lender of last resort and to strengthen the banking system's capacity to weather a liquidity crisis. The facility gave the BCRA the option to sell dollar-denominated Argentine government bonds to a consortium of reputable international banks, subject to a buy-back clause (with an embedded implicit interest rate). In 1999, the World Bank reinforced this facility by committing contingent funds to help meet margin calls in the event it was activated. By the end of the 1990s, the contingent repo line ensured the liquidity of about 10 percent of the system's deposits, in addition to the equivalent of nearly 20 percent of deposits already held in the form of liquid and safe FX assets (dollar cash and near-cash in the central bank and commercial banks).

5. Improvements in the framework for creditor rights and corporate insolvency

In 1995, Argentina enacted a new modern insolvency law that fostered a substantially improved system of corporate liquidation and rehabilitation. Similarly important reforms were implemented to improve the enforcement of secured and unsecured creditor rights. The World Bank assessment of Argentina's degree of compliance with international standards on insolvency and creditor rights found that, if one ignores the changes introduced most recently (in March 2002), the "permanent" framework for corporate insolvency and creditors rights is "largely consistent with the Principles."

[39] For further details see De la Torre (2000).

[40] A thorough assessment of the process and results of provincial bank privatization in Argentina can be found in World Bank (1999).

Box 2. Argentina's Via Crucis

- President De la Rúa takes power in December 1999 when the country is already in recession and the public debt has reached high levels.
- The government tries to gain confidence, and thus restore growth, through fiscal adjustment.
- The "impuestazo" is implemented in January 2000. The new tax scheme includes, among other things, an increase in the taxation on consumer goods, an extension of VAT to health insurance and transportation, and an extension of the income tax base.
- The fiscal adjustment does not bring growth. Rather, the recession deepens and doubts about debt sustainability increase dramatically.
- The political weakness of the De la Rúa's administration becomes evident when vice president Carlos Alvarez resigns in October 2000.
- In December 2000, Minister Machinea negotiates a US$40 billion package with international financial institutions and domestic financial institutions to extend the public debt maturity and try to ease fears of default. The deal implied a much lower amount of fresh funds, around US$12 billion.
- The government's bet is that once these fears were eased, growth would resume, but growth does not pick up and Mr. Machinea resigns in March 2001.
- The newly appointed economy minister Lopez Murphy resigns after two weeks in office, upon strong opposition to the new fiscal austerity package he sent to Congress on March 16.
- Mr. Cavallo becomes economy minister once more. He is empowered by Congress with special powers and tries different, more direct, measures to revive growth. On April 16, 2001, he proposes to congress an amendment to the convertibility law, according to which the peso would be pegged to a basket consisting of US dollars and euros with equal weights, when the dollar-euro rate reaches 1:1. Congress approves the amendment in mid-June 2001. This change aims at better aligning the peso more with Argentina's trading partners.
- On April 25, 2001, the president of the central bank, Mr. Pedro Pou, resigns amid disagreements with Mr. Cavallo and other members of the government. Mr. Roque Maccarone replaces Mr. Pou.
- On July 10, 2001, the government, after being forced to pay 1,410 basis points over US Treasuries to place a short-term bond, announces a "zero deficit" rule.
- It thus becomes obvious that the government cannot tap capital markets without the debt exploding.
- To implement the zero deficit rule, the government pushes hard for an IMF-supported program. But to obtain it, the government needed an agreement with the provinces on tax revenue sharing.
- Mr. John Taylor, US Treasury under secretary, declares that there would not be any external help for Argentina until it can comply with its objective of a zero deficit.
- On October 26, 2001, the negotiations toward an agreement with the provinces on the distribution of tax revenues fail (again).
- On October 28, 2001, minister Cavallo starts negotiations to obtain resources from the IMF and the US Treasury to purchase collateral for new bonds to be issued in an exchange for the nearly US$100 billion of local and external debt.
- On October 29, 2001, Mr. Cavallo defines the debt exchange operation as voluntary. The old debt would exchange for bonds paying seven percent per year and guarantee by taxes revenues. However, the IMF and US Treasury ask for compliance with the zero deficit and an agreement with the provinces on the tax revenue sharing before any kind of financial support is given. The negotiations last for more than a month.
- On November 19, 2001, the IMF announces that it would not make any new disbursements to Argentina without being satisfied that the country has secured the goals previously defined.
- On December 2, 2001, the government announces measures restricting deposit withdrawals (the corralito). Withdrawals are limited to 250 pesos (dollars) per week per account.
- On December 19, 2001, Mr. Cavallo and all other ministers resigned.
- On December 20, 2001, President De la Rúa resigns and Mr. Ramon Puerta becomes interim president.
- On December 23, 2001, Mr. Rodriguez Saa, governor of one of the provinces, becomes the new interim president. His period is supposed to last 60 days, until elections are called on March 3, 2002. He declares the suspension of external debt payments for at least 60 days.

- On December 24, 2001, the government announces that a new fiat currency (i.e., without foreign-currency backing) would be created, the "argentino."
- On December 30, 2001, Mr. Rodriguez Saa resigns and the legislative assembly chooses Mr. Eduardo Duhalde as new president. He assumes power on January 2, 2002, and officially ends the currency board and announces the floating of the peso.

Table 1
Consolidation and Internationalization of Argentina's Banking System

	1994	1998	2000
Number of total banks	166	104	89
Foreign banks			
Number of banks	31	39	39
Number of branches	391	1,535	1,863
Share of total assets (%)	15	55	73
Number of public banks	32	16	15

Figures correspond to end-of-year values.
Source: Central Bank of Argentina

Table 2
CAMELOT Ratings for Banking System Regulation

Country	Total Score*
Singapore	16
Argentina	21
Hong Kong	21
Chile	25
Brazil	30
Peru	35
Malaysia	41
Colombia	44
Korea	45
Philippines	47
Thailand	52
Indonesia	52

*Lower numbers indicate better ranking.

Source: World Bank, *Argentina Financial Sector Review,* 1998

Table 3
Selected Banking System Indicators in Argentina

	1997	1998	1999	2000
Net Worth/Assets	12.1	11.4	10.7	10.5
Capital / Risk Weighted Assets	18.1	17.6	18.6	21.2
Non-Performing Loans/Total Loans (a)	8.2	6.0	7.1	10.2
Provisions/Total Loans	7.7	7.1	7.8	8.7
Provisions/Non-Performing Loans (a)	108.6	140.4	122.3	77.1
Systemic Core Liquidity (b)	43.0	39.6	40.9	38.7
Return on Equity before Provisions	22.6	10.6	8.4	7.8
Return on Equity after Provisions	7.4	-2.2	-6.7	-9.4
Return on Assets after Provisions	1.0	-0.3	-0.8	-1.0
Leverage Ratio (not in precent)	6.1	7.3	7.7	8.3

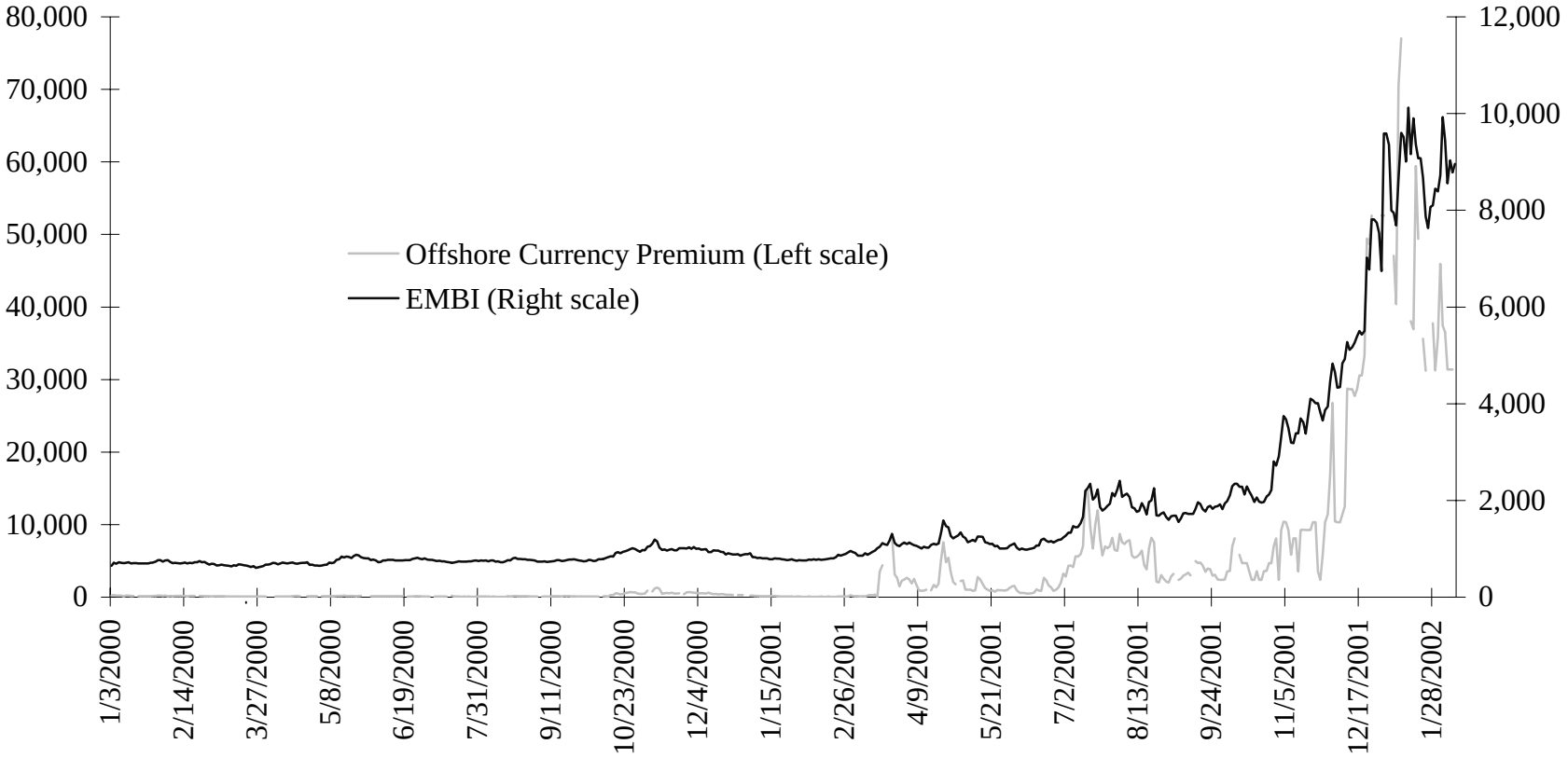
(a) Non-performing loans is defined as the sum of loans with problems, loans with high risk and non-recoverable loans.
(b) Defined as the ratio of international reserves of the central bank in foreign currency and other liquidity requirements held abroad by banks to total deposits.
Percentages at end of year
Source: Central Bank of Argentina

Table 4
Argentina's Quasi-Monies in Circulation
(Millions of Argentine pesos)

	Denomination	December 2001	March 2002
a. Federal government	Lecop	1,039	2,649
b. Provincial "own" securities		1,627	2,591
1. Buenos Aires	Patacones	822	1,591
2. Buenos Aires, City	Porteno	-	-
3. Catamarca	Ley 4748	26	31
4. Chaco	Quebracho	50	100
5. Cordoba	Lecor	200	300
6. Corrientes	Cecaror	193	185
7. Entre Rios	Bonfe	54	148
8. Formosa	Bocanfor	33	50
9. Jujuy	Patacon	-	6
10. Mendoza	Petrom	-	-
11. La Rioja	Debt Cancelation	8	8
12. Tucuman	Bocade	98	173
Total quasi-monies (a+b)		2,666	5,240
As percentage of pesos in circulation			
Total quasi-monies		23.2	45.6

Source: Ministry of Economy, Argentina

Figure 1
Argentina's Country Risk and Currency Risk

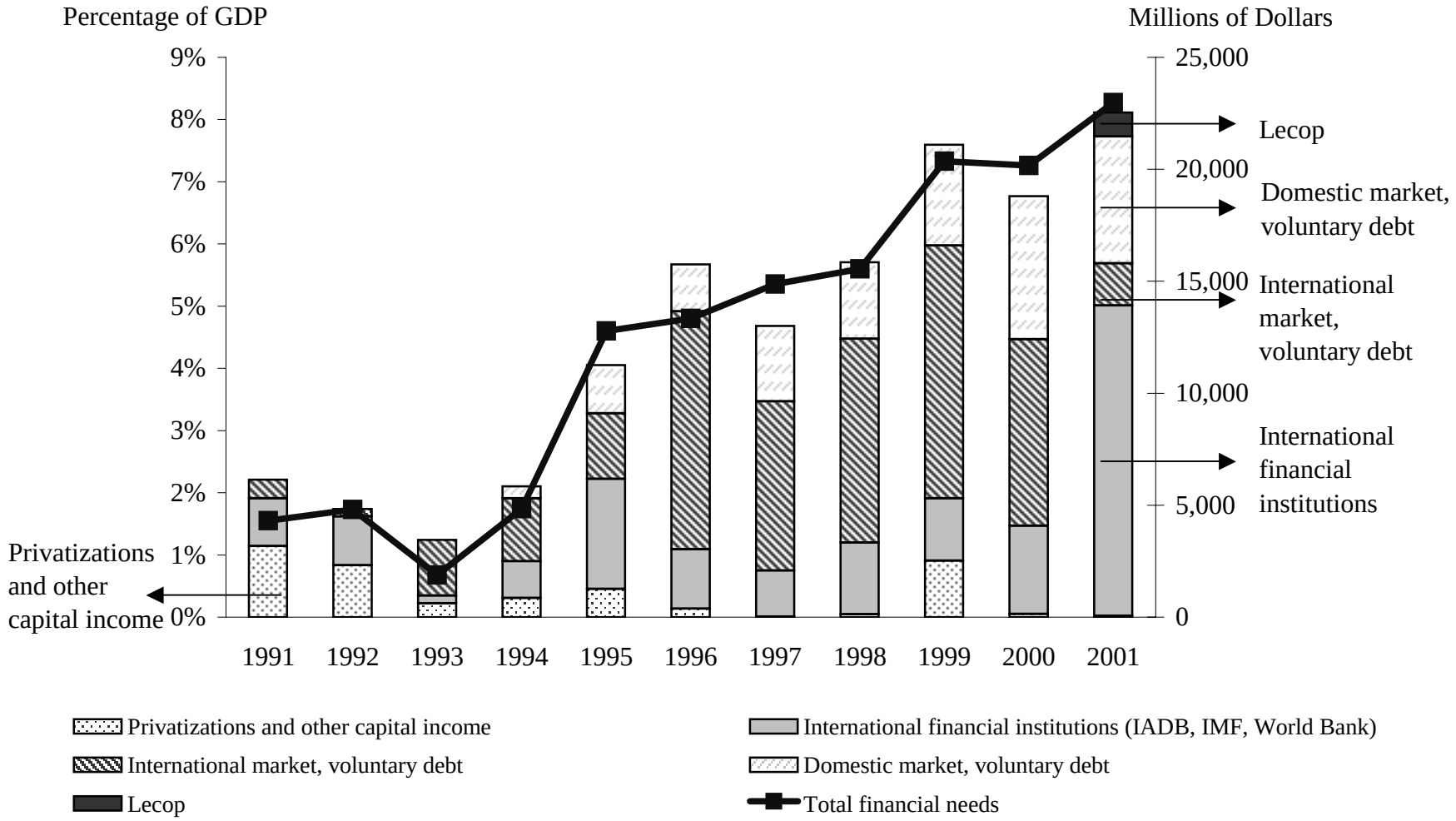


The offshore currency premia as measured by Schmukler and Serven (2001), was calculated with the 1-month non-deliverable forward (NDF) discount, the forward exchange rate minus the spot exchange rate.

All rates are in basis points, annualized, and continuously compounded.

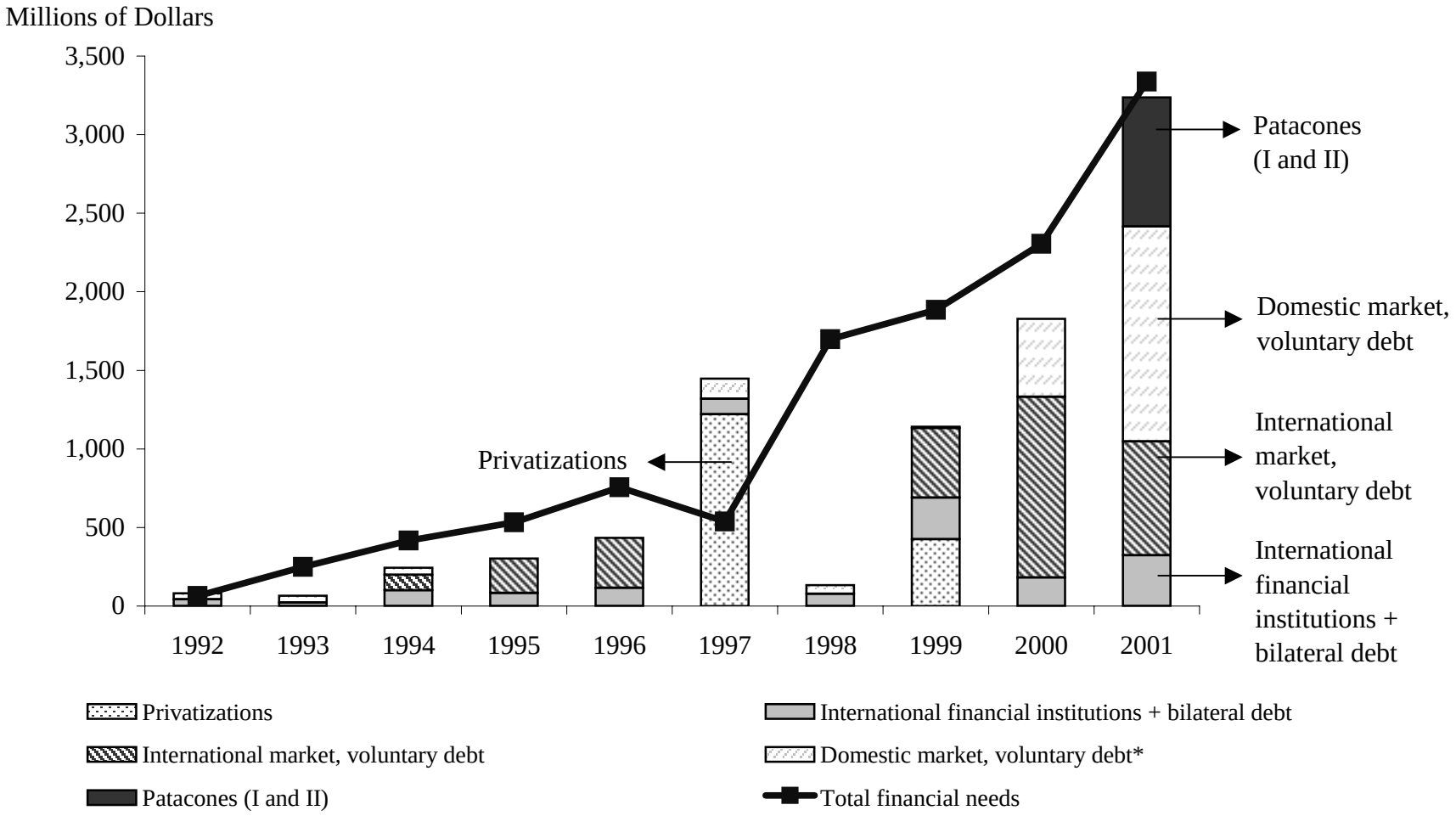
Sources: JP Morgan, Deutsche Bank, and Bloomberg

Figure 2
Financing Sources of the Argentine Federal Government



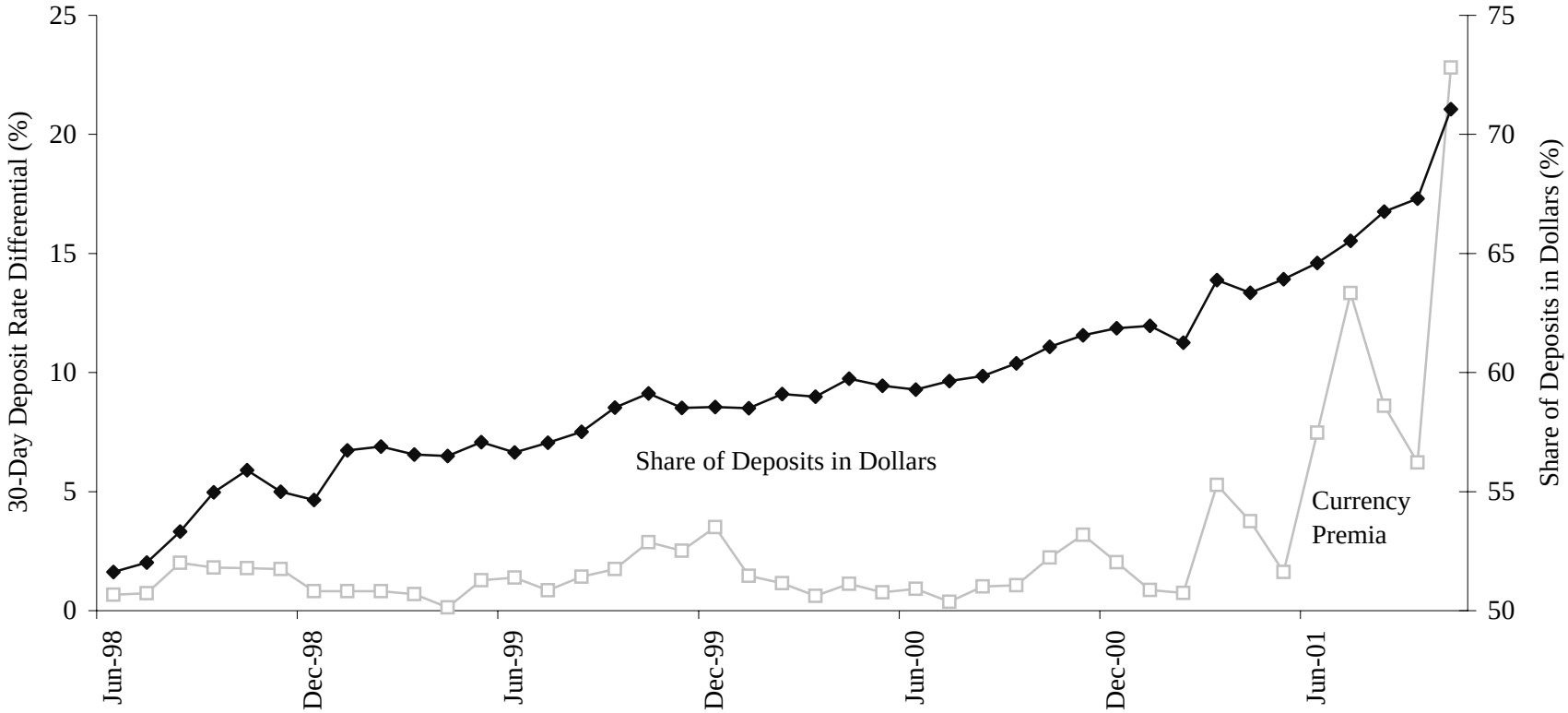
The gap between the total financial needs and the sum of the financing sources corresponds to other sources including cash, bank financing, and repos.
Source: Central Bank of Argentina

Figure 3
Financing Sources of the Province of Buenos Aires



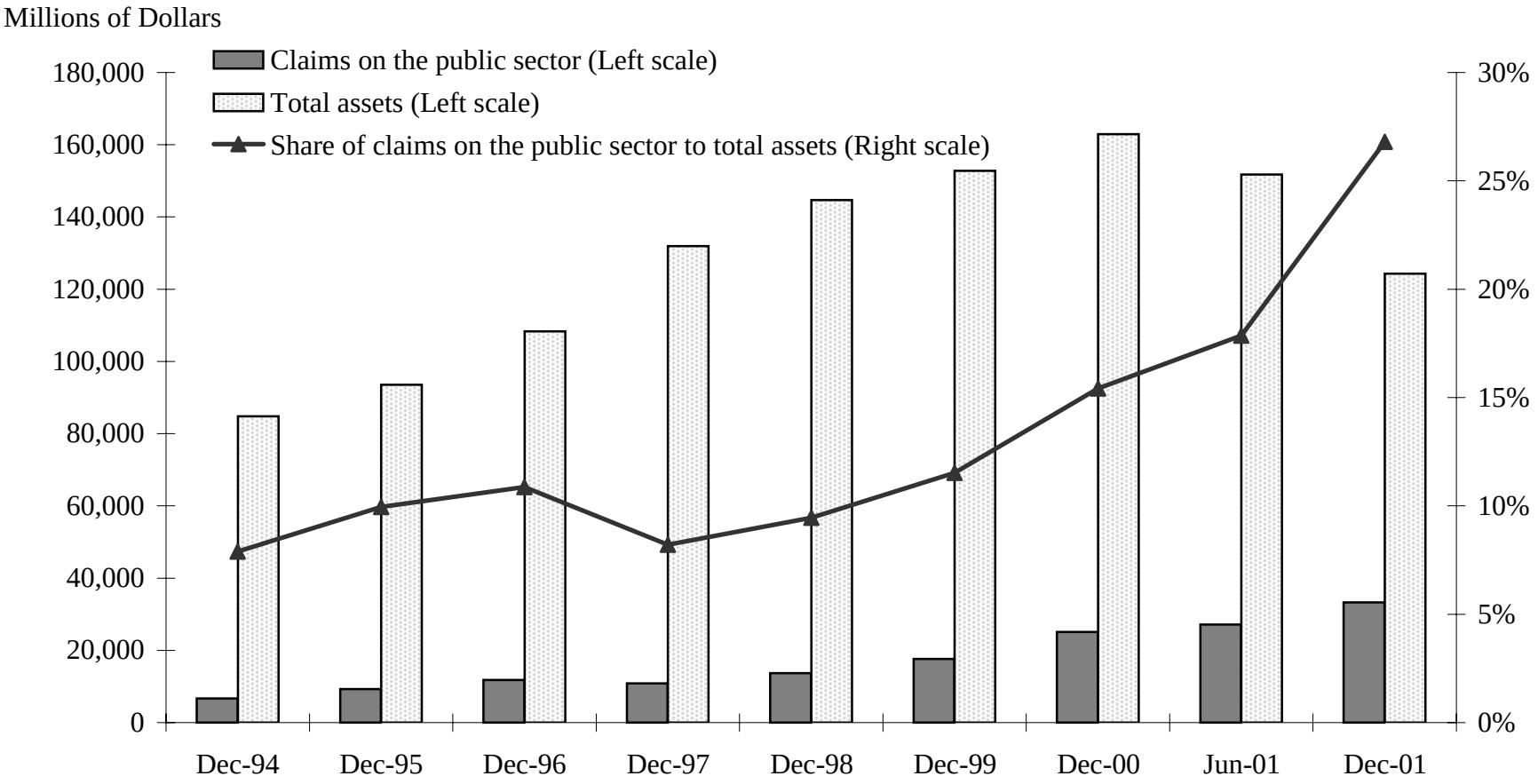
*Includes banking debt and national government financing
The gap between the total financial needs and the sum of the financing sources corresponds to other sources including cash, bank financing, and repos.
Source: Central Bank of Argentina

Figure 4
Argentine Deposits in Dollars and Differential of Interest Rates



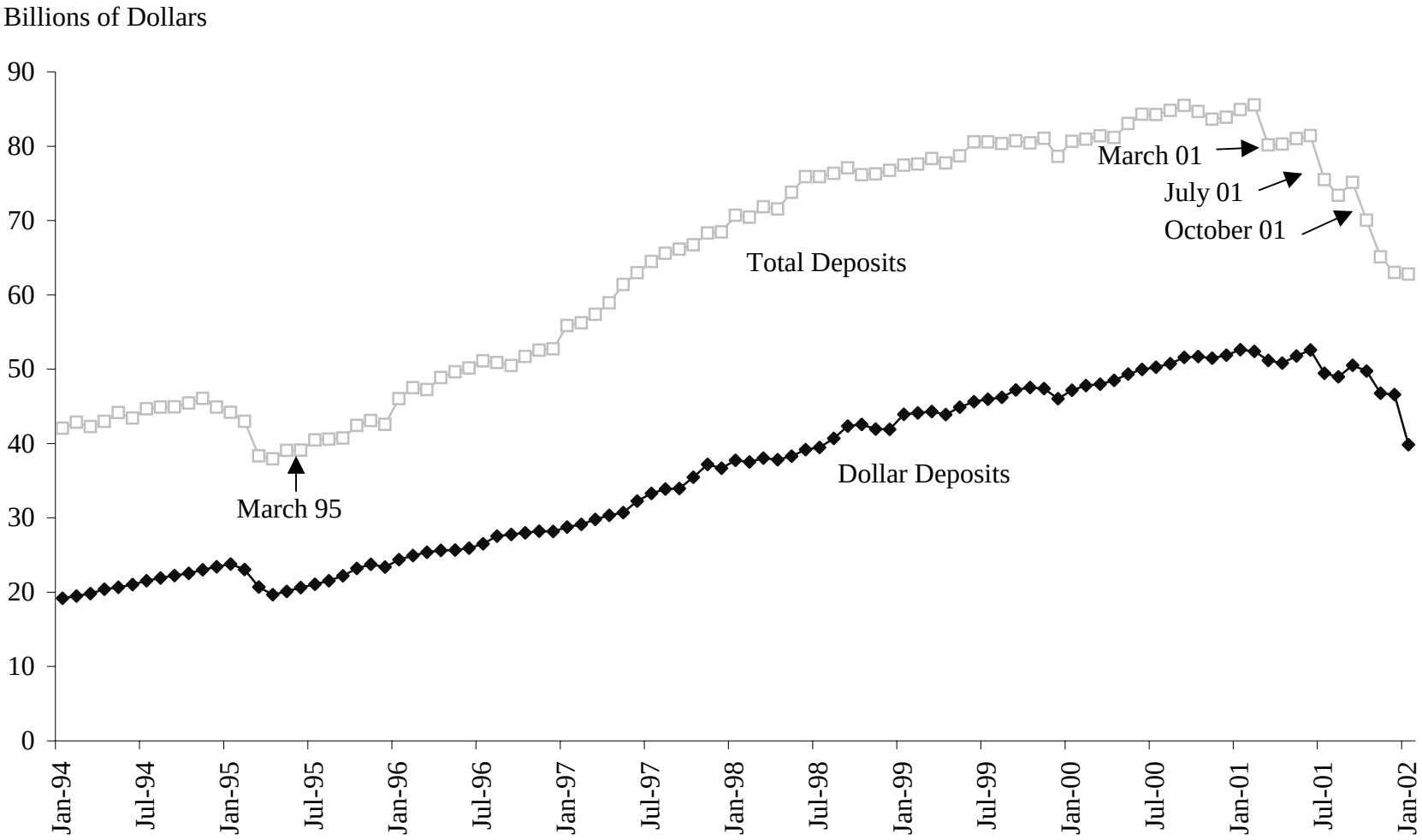
Currency premia is defined as the difference of domestic interest rates for 30-day deposits in pesos and US dollars.
Source: Deposits from Ministry of Economy, Argentina, 30-day deposit interest rates in pesos and dollars from Bloomberg

Figure 5
Argentina's Banking System



Banking system is defined to include public banks, private domestic banks, foreign banks, and non-banks.
Source: Central Bank of Argentina

Figure 6
Evolution of Argentine Deposits



Source: Ministry of Economy, Argentina